Curriculum Vitae

Michael R. Hill, Ph.D., P.E.
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BACKGROUND

Dr. Hill has over 20 years of experience in the field of Biomechanics, including over 7 years of experience investigating, analyzing, and professing matters involving a variety of forensic engineering issues. He is an expert in experimental, theoretical, and computational tissue biomechanics, with a focus on injury mechanisms, human tissue damage, and nonlinear soft tissue mechanics. In his current role, Dr. Hill applies a biomedical perspective to a variety of cases including vehicle and pedestrian collisions; biomechanical analysis and injury consistency; occupant and pedestrian kinematics; product and machinery failures; and slip, trip and fall investigations.

Dr. Hill is a registered and licensed Professional Engineer in multiple States and holds a Doctor of Philosophy degree in Bioengineering with a focus on Biomechanics. He has investigated hundreds of cases involving motor vehicle accidents, slip, trip, and fall accidents, medical device failures, and industrial accidents across the United States. Dr. Hill has collaborated with cardiovascular and orthopedic surgeons, engineers, and scientists in the United States, Japan, and the United Kingdom on various medical research projects. He has lectured in the field of biomechanics and numerical methods, and his research has been presented at over 40 international and national scientific conferences and published in 17 academic articles with over 1,000 citations. Dr. Hill serves as a peer reviewer for Biomedical Engineering and Biomechanics journals and conferences. He also has an extensive testifying history in depositions and trials.

AREAS OF EXPERTISE

- Orthopedic and Cardiovascular Biomechanics
- Vehicle Accident Reconstruction
- Occupant and Pedestrian Kinematics
- Biomechanical Analysis and Injury Consistency
- Human Tissue Damage Mechanics
- Automobile Restraint Analysis
- Black Box and Event Data Recorder Downloads and Analysis
- Slip, Trip, and Fall Investigations
- Medical Device Failures
- Mechanical Design
- Statistics
- Automobile and Tractor-Trailer Collisions
- Bicycle, Motorcycle, and Pedestrian Accidents
- Boat and Watercraft Accidents
- Building Codes, ANSI and ASTM
- Digital Video Analysis
- Product and Machinery Failure Analysis
- Retail Facility Safety
- Theme Parks and Recreation Facility Safety

PROFESSIONAL LICENSES & CERTIFICATIONS

- Licensed Professional Engineer (NCEES)
  - North Carolina #57388
  - Florida #102435
  - Texas #143275
  - Georgia #52706
  - Alabama #56336
  - South Carolina #42269
  - Louisiana #46749
  - Mississippi #33926
  - Tennessee #130205
- Bosch Crash Data Retrieval Tool Certified Technician

EDUCATION

- Ph.D., Bioengineering, University of Pittsburgh, 2011
- M.S., Biomedical Engineering, University of Alabama at Birmingham, 2006
- B.S., Biological Engineering, Mississippi State University, 2004

PROFESSIONAL EXPERIENCE

2023 - Present | Quality Forensic Engineering, LLC | Biomechanical Engineer, Charlotte, NC

2018 - 2023 | Rimkus | Principal Consultant (2022-2023), Senior Consultant (2018-2021), Houston, TX

2015 - 2018 | University of Nottingham, School of Mathematical Sciences | Research Fellow/Lecturer, Nottingham, UK

2012 - 2015 | University of Texas at Austin (UT Austin) | Postdoctoral Fellow, Austin TX

2011 - 2012 | University of Pittsburgh Medical Center, Trauma Division, Department of Orthopaedic Surgery | Research Engineer, Pittsburgh, PA

2008 | Tohoku University, Department of Neuroendovascular Therapy| Research Fellow, Sendai, Japan

2006 - 2011 | University of Pittsburgh, Department of Bioengineering | Graduate Research Fellow/Teaching Assistant, Pittsburgh, PA

2004 - 2006 | University of Alabama at Birmingham, Department of Biomedical Engineering | Graduate Research Fellow, Birmingham, AL

NOTABLE PROJECTS

Biomechanical Evaluation

- Determined consistency of occupant injuries and tissue damage with human movement kinematics associated with automobile collision dynamics
- Measured vibrations and accelerations in motor vehicles to determine consistency with biomechanical loading and orthopedic tissue damage mechanics

Occupational Injury Biomechanics

- Analyzed head and spinal injury mechanics consistent with impact by falling objects
- Determined consistency of soft tissue injuries with slip, trip and fall accidents

Biomechanical Research/Development

- *Airway Computer Model:* developed numerical analysis solvers to predict the biomechanical response and remodeling of asthmatic airway wall tissues
- *High-Throughput Biological Imaging Methods*: collaborated with a multidisciplinary team of biologists and mathematicians to develop custom software techniques that greatly increased both quantity and quality of data obtained from histological images

- *Statistical Model of Cancer Treatment*: applied Bayesian statistics to develop a model of clonogenic survival assays that includes experimental uncertainties and errors in predictions
- *Biomechanical Testing System*: led engineering team in the design and construction of a 3-axis biomechanical testing system and frame for soft tissues
- *Heart Computer Model*: developed state-of-the-art computer models to predict pathological heart wall tissue remodeling associated with pulmonary hypertension, validated by experimental biomechanics technique
- *Sciatic Nerve Injury Prevention Project*: along with engineers, orthopedic surgeons and residents, evaluated new clinical techniques for preventing peroneal nerve injury during surgery
- *Nerve Strain/Pressure Measurement Project*: designed and assembled a system for measuring strain and pressure in the nerve during mock surgery
- *Brain Aneurysm Model*: developed a computer model to determine the mechanisms of aneurysm mechanical behavior and rupture and validated results with a custom-built biomechanical testing system combined with state-of-the-art microscopy
- *Side Impact Automobile Accident Analysis*: assisted in a project to evaluate the effect of high-speed side automobile impacts on the lower torsos of human cadavers

PROFESSIONAL ASSOCIATIONS AND VOLUNTEER SERVICE

- Peer Reviewer of Scientific Journals (2011-present)
    - Annals of Biomedical Engineering
    - International Journal for Numerical Methods in Biomedical Engineering
    - Journal of Biomechanical Engineering
    - Public Library of Science (PLoS) ONE
- Peer Reviewer for Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C)
    - 2025, General Program
    - 2024, Ph.D. Student Paper Competition
- Current Member, the Society of Automotive Engineers (SAE International)
- Assisted with daycare playground beautification for Kids Incorporated of the Big Bend (2024)
- Programme Committee Member, 5th International Conference on Computational and Mathematical Biomedical Engineering, Univ. of Pittsburgh (2017)
- Postdoctoral Affairs Committee Member, Univ. of Nottingham (2015-2018)
- MayFest Student Engagement Event, Univ. of Nottingham (2015, 2016)
- Biomedical Engineering Society (BMES) Chapter Community Outreach Chair, Univ. of Pittsburgh (2010-2011)
- BMES Chapter Vice President, Univ. of Alabama at Birmingham (UAB, 2005-2006)
- Graduate Student Senator, Graduate Student Association, UAB (2005-2006)

AWARDS, HONORS, FELLOWSHIPS, AND RESEARCH SUPPORT

- UK Multi-Scale Biology Network Support for International Collaboration, 2017
- Univ. of Nottingham School of Mathematical Sciences Biomedical Scholarship, 2016
- National Institutes of Health (NIH) Ruth L. Kirschstein National Research Service Award, 2013
- American Heart Association Southwest Affiliate Postdoctoral Fellowship, 2013

- National Science Foundation (NSF) / Japan Society for the Promotion of Science (JSPS) East Asia and Pacific Summer Institutes (EAPSI) Fellowship, 2008
- Finalist, Ph.D. Student Paper Competition: ASME Summer Bioengineering Conference, 2011
- NIH Fellowship: Biomechanics in Regenerative Medicine (BiRM), 2006
- NSF Graduate Research Fellowship, 2005
- Tau Beta Pi Engineering Honors Society, 2003

COURSEWORK/CONTINUING EDUCATION

Advanced Coursework

- Orthopedic Biomechanics
- Organ, Tissue, & Cell Biomechanics
- Advanced Topics in Biosolid Mechanics
- Biomechanical Measurements
- Advanced Fluid Mechanics
- Molecular Mechanisms of Tissue Growth and Differentiation
- Continuum Mechanics
- Finite Element Analysis
- Numerical Methods
- Cardiovascular System Dynamics and Modeling
- Engineering Analysis
- Tissue-Implant Interactions
- Elastic Stability
- Advanced Mechanics of Materials
- Biochemistry
- Organic Chemistry
- Bioinstrumentation
- Cell Biology
- Immunology
- Biomedical Materials
- Dynamics of Aging
- Biomechanics
- Physiological Systems in Biomedical Engineering
- Biophysical Properties of Materials
- Transport in Biological Environments
- Biosystems Simulation
- Microbiology

Continuing Education

2026 | Introduction to Motor Vehicle Accident Occupant Kinematics (National Association of Professional Accident Reconstruction Specialists, NAPARS)
| Recon-3D V2.0 Certificate Course
2025 | Tractor-Trailer Collision Reconstruction/Technology
| Engineering Roundtable Seminar
| Advanced Analysis of EDR
| Slip & Falls: Walk this Way
| Introduction to Building Codes
| Safety Belt Examinations
| Tractor-Trailer Collision Reconstruction Technology
| Comparing Perception Response Times to Average Drivers in Automobile Crashes
| Accident Reconstruction and Digital Data
| Forensic Evaluation of Slip, Trip, and Fall Events
2024 | Infotainment System Data
| Mechanical Systems Failures
| LiDAR 3D Scanning
| IPTM Pedestrian Bicycle Accident Reconstruction
| Steering Data from EDRs
| EDR Data – Use It All
| Tire Basis & Tire Failure Evaluations

| Product Liability
| Motor Vehicle Accident Reconstruction: Bumper Damage Analysis
| Motor Vehicle Accident Reconstruction: Skid to Rest and Skid Mark Analysis
| Motor Vehicle Accident Reconstruction: Brake Failures
| Braking Dynamics
| A Basic Guide to Fall Prevention in Industry
| Forensic Analysis of Stair Descent Falls
| Artificial Intelligence: Technologies for Smart Systems Design

2023 | Surveying Essentials
| Fundamentals of Asphalt Pavement Design
| Concrete Fundamentals, An Introduction
| Concrete 1, Evaluation of Causes of Damage
| Heavy Truck Braking System and Braking Techniques
| Safe Backing of Tractor-Trailer Rigs
| Transportation Engineering, Traffic Flow Theory
| Accessible Parking
| Essentials of the Connected Vehicle
| Material Science, Structure of Metals
| Material Science, Properties of Metals
| Ethics for Professionals
| Electric Motors

2019 | SAE International: Injuries, Anatomy, Biomechanics, and Federal Regulation
| Northwestern University: Crash Investigation 1

TEACHING EXPERIENCE

- Lecturer, Computerized Mathematical Methods in Engineering, School of Mathematical Sciences, Univ. of Nottingham, Spring 2018
- Guest Lecturer, Models for Growth & Remodeling in Native and Engineered Tissue Systems, Department of Biomedical Engineering (BME), UT Austin, Spring 2014
- Guest Lecturer, Tissue Biomechanics, Dept. of BME, UT Austin, Spring 2013
- Guest Lecturer, Biomechanics, Dept. of BME, UT Austin, Fall 2012 and Fall 2013
- Teaching Assistant, Senior Design, Dept. of Bioengineering, Univ. of Pittsburgh, Fall 2009 and Spring 2010
- Project Supervisor, Senior Design, Dept. of Mechanical Engineering, Univ. of Pittsburgh, Fall 2006 through Spring 2010

SCIENTIFIC CONFERENCE PRESENTATIONS

Podium Presentations

1. Agrawal Y, Fortunato RN, Asadbeygi A, Ramezanpour M, Hill MR, Robertson AM, Maiti S, “Effect of Collagen Fiber Tortuosity Distribution on the Mechanical Response of Arterial Tissue,” *Summer Biomechanics, Bioengineering and Biotransport Conference (SB3C),* Lake Geneva, WI, 2024

2. Brook BS, Philp CJ, Hill MR, Bullock AM, Liu B, Habgood AN, John AE, Middlewick RJ, Stephenson KE, Goodwin AT, Billington CK, Tatler AL, O'Dea RD, Johnson SR, "A Novel, Comprehensive Method to Study Murine Airway Remodeling Reveals Differential Smooth Muscle and Collagen increases in Large and Small Airways," *American Thoracic Society (ATS) International Conference*, Dallas, Texas, 2019 (Mini Symposium; DOI 10.1164/ajrccm-conference.2019.199.1_MeetingAbstracts.A5889)
3. Hill MR, Philp CJ, Billington CK, Tatler AL, Johnson SR, O'Dea RD, Brook BS, "Mechanical Homeostasis in a Morphoelastic Mechanobiological Model of Airway Remodelling," *8th World Congress of Biomechanics*, Dublin, Ireland, 2018
4. Hill MR, O'Dea RD, Brook BS, "A Mechanobiological Morphoelastic Model of Inflammation- and Contractile Agonist-Induced Airway Wall Remodelling During Asthma," *UK Conference on Multiscale Biology*, University of Nottingham, UK, 2018
5. Hill MR, Philp CJ, Billington CK, Tatler AL, O'Dea RD, Johnson SR, Brook BS, "A Mechanobiological Morphoelastic Model of Inflammation and Mechanotransduction-Induced Remodelling of the Airway Wall: Application to an Ovalbumin Mouse Model of Asthma," *Proceedings of the Biomedical Engineering Society (BMES) Annual Meeting*, Phoenix, AZ, 2017
6. Hill MR, O'Dea RD, Brook BS, "A Mechanochemical Computational Model of Airway Growth and Remodelling in Asthma," *3rd Workshop on Soft Tissue Modelling*, School of Mathematics and Statistics, University of Glasgow, UK, 2017
7. Philp CJ, Billington CK, Hill MR, Bullock AM, Liu B, Habgood AN, Miller S, O'Dea RD, Tatler AL, Johnson SR, Brook BS, "Altered ASM Mass and Contractile Responses in an Ovalbumin Murine Model of Asthma during the Inflammation Resolution Phase as assessed by PCLS and IHC," *10th Young Investigator's Meeting in Smooth Muscle in Airways & Vascular Disease*, Philadelphia, PA, 2017
8. Hill MR, Philp CJ, Bullock AM, Billington CK, O'Dea RD, Tatler AL, Johnson SR, Brook BS, "Inflammation-Induced Airway Remodelling in an Ovalbumin Murine Model of Asthma: An Integrated In Silico - In Vivo Study," *5th International Conference on Computational and Mathematical Biomedical Engineering (CMBE)*, Pittsburgh, PA, USA, 2017
9. Hill MR, O'Dea RD, Brook BS, "A Mathematical Model of Lung Airway Growth Mechanics: Application to a Murine Model of Asthma," *European Conference on Mathematical and Theoretical Biology / Society for Mathematical Biology Annual Conference*, University of Nottingham, Nottingham, UK, 2016
10. Hill MR, O'Dea RD, Brook BS, "Modelling Tissue Growth as a Non-Isochoric Deformation Capable of Imparting Stress: Implications for the Airway Wall," *Emerging Trends in Applied Mathematics and Mechanics*, *Mini-Symposium 1: Mechanics of Fibre-reinforced Materials: Theory and Applications*, Perpignan, France, 2016
11. Hill MR, Tatler AL, O'Dea RD, Billington CK, John AE, Deacon K, Johnson SR, Brook BS, "Biomechanical Model of Inflammation-Induced Airway Smooth Muscle Mass Accumulation and Extracellular Matrix Deposition in an Ovalbumin Murine Model of Asthma," *ATS International Conference*, San Francisco, CA, USA, 2016 (Mini Symposium, DOI 10.1164/ajrccm-conference.2016.193.1_MeetingAbstracts.A7525)

12. Avazmohammadi R, Hill MR, Simon MA, Zhang W, Sacks MS, "A Novel Fiber-Level Structural Constitutive Model for Viable Right Ventricular Myocardium*," Society of Engineering Science (SES) 52nd Annual Technical Meeting*, Texas A&M University, College Station, Texas, USA, 2015
13. Hill MR, Simon MA, Sacks MS, "Time-Evolving Growth and Remodeling Response of Right Ventricular Myocardium to Pressure Overload," *Proceedings of the BMES Annual Meeting*, San Antonio, TX, 2014
14. Siegel SM*, Dar UA, Rahman M, Hill MR, Simon MA, Sacks MS, "Quantitative Histomorphological Analysis of Right Ventricular Myocardium Under Chronic Pressure Overload," *Proceedings of the BMES Annual Meeting*, San Antonio, TX, 2014
    * Winner, National BMES Student Design and Research Award
15. Hill MR, Raut SS, Rodriguez A, Weber III TV, Chen D, Placeres C, Cheang D, Sacks MS, "Triaxial Experimental Analysis and Simulation (TExAS) System for Full 3D Modeling of Soft Biological Tissues," *7th World Congress of Biomechanics*, Boston, MA, 2014
16. Hill MR, Valdez-Jasso D, Simon MA, Champion HC, Sacks MS, "Right Ventricular Adaptation to Pulmonary Hypertension in a Rat Model," *Proceedings of the BMES Annual Meeting*, Seattle, WA, 2013
17. Robertson AM*, Hill MR, X Duan, S Watkins, "Structurally Motivated Constitutive Models for the Arterial Wall - Theory and Experiments," *ECCOMAS Thematic Conference on Simulation and Modeling of Biological Flows - SIMBIO,* Free University of Brussels, Belgium, 2011
    *Keynote Address
18. Hill MR*, Robertson AM, "Abrupt Recruitment of Medial Collagen Fibers in the Rabbit Carotid Artery," *Proceedings of the American Society of Mechanical Engineers (ASME) 2011 Summer Bioengineering Conference (now SB3C),* Farmington, PA, 2011
    * Finalist in the PhD Student Paper Competition
19. Robertson AM, Zeng Z, Durka MJ, Kallmes DF, Kadirvel R, Ding Y, Dai D, Lewis D, Hill MR, Watkins SC, "Use of Computational Fluid Dynamics for the Design and Development of Animal Models for Studies of the Pathophysiology of Cerebral Aneurysms," *2nd International Conference on Computational and Mathematical Biomedical Engineering*, Washington, DC, 2011
20. Hill MR, Robertson AM, "Combined Histological and Mechanical Evaluation of Isotropic Damage to Elastin in Cerebral Arteries," *6th World Congress of Biomechanics*, Singapore, 2010
21. Robertson AM, Hill MR, Li D, "On the Biomechanics of Damage in Cerebral Vessels," *IVth International Symposium on Modeling of Physiological Flows, MPF2010*, Cagliari, Sardinia Island, Italy, 2010

Conference Papers

22. Yang B, Lesicko J, Sharma M, Hill MR, Sacks MS, Tunnell JW, "Collagen Fiber Orientation Mapping with Top Layer Discrimination using Polarized Light Spatial Frequency Domain Imaging (pSFDI) on Native Heart Tissue," *Biomedical Optics, Optical Society of America Technical Digest (online),* paper BM4B.5, Miami, FL, 2014

Conference Poster Group Discussions

23. Brook BS, Hill MR, Philp CJ, Habgood AN, Middlewick RJ, John AE, Stephenson KE, Goodwin AT, Billington CK, Tatler AL, O'Dea RD, Johnson SR, "Inflammation- and Mechanotransduction-driven Airway Remodeling in a Mouse Model of Asthma; an Integrated in vivo - in silico Study," *ATS International Conference*, San Diego, CA, USA, 2018 (Poster Discussion Session; DOI /10.1164/ajrccm-conference.2018.197.1_MeetingAbstracts.A2927)
24. Philp CJ, Billington CK, Hill MR, Bullock AM, Liu B, Habgood AN, Miller S, O'Dea RD, Tatler AL, Johnson SR, Brook BS, "Altered Airway Smooth Muscle Mass and Contractile Responses in an Ovalbumin Murine Model of Asthma during the Inflammation Resolution Phase as Assessed by Precision Cut Lung Slices (PCLS) and Immunohistochemistry," *ATS International Conference*, Washington, DC, USA, 2017 Poster Discussion Session, DOI 10.1164/ajrccm-conference.2017.195.1_MeetingAbstracts.A3148)
25. Hill MR, O'Dea RD, Brook BS, "In Silico Model of Airway Smooth Muscle Cell and Extracellular Matrix Growth and Remodeling," *9th Young Investigator's Meeting in Smooth Muscle in Airways & Vascular Disease*, London, UK, 2015

Conference Posters

26. Philp CJ, Hill MR, Billington CK, O'Dea RD, Tatler AL, Brook BS, Johnson SR, "A Novel Computational Image Analysis Method gives Comprehensive Insight into Airway Remodelling and Resolution in the Ovalbumin Model of Asthma," *Thorax* 73:A23, 2018
27. Hill MR, O'Dea RD, Brook BS, "Inflammation-Induced Growth and Remodeling of Airways During Asthma," *2nd Workshop on Soft Tissue Modelling*, School of Mathematics and Statistics, University of Glasgow, UK, 2015
28. Hill MR, Simon MA, Sacks MS, "Structural Remodeling and Mechanical Adaptation of Right Ventricle Free Wall Myocardium to Sustained Pressure Overload," *North American Vascular Biology Organization (NAVBO) 4th Annual Yale Cardiovascular Research Center Symposium: Cardiovascular Inflammation and Remodeling*, New Haven, CT, 2014
29. Simon MA, Hill MR, Champion HC, Sacks MS, "Biomechanics of Right Ventricular Myocardial Remodeling in Response to Pressure Overload," *International Society for Heart and Lung Transplantation (ISHLT) 34th Annual Meeting & Scientific Sessions*, San Diego, CA, 2014
30. Yang B, Sharma M, Hill MR}, Tunnell JW, Sacks MS, "A Method for Quantifying Fiber Orientation in Valvular Tissues with Polarized Spatial Frequency Domain Imaging," *Proceedings of the BMES Annual Meeting*, Seattle, WA, 2013
31. Yang B, Sharma M, Hill MR, Sacks MS, Tunnell JW, "Biomechanical Properties Extraction on a Thin Sample with Highly Ordered Structure Using Polarized Spatial Frequency Domain Imaging," *Engineering Conferences International (ECI) Advances in Optics for Biotechnology, Medicine, and Surgery XIII*, Lake Tahoe, CA, 2013
32. Robertson AM, Duan X, Valentin A, Hill MR, Li D, Zunino P, Allen R, Wang Y, Watkins S, "Modeling the Biomechanics of the Arterial Wall Across Multiple Temporal and Spatial Scales," *Annual Meeting, Current Challenges in Computing (CCubed) Conference, Special Focus on New Directions in Biomedical Research*, Napa, CA, 2013

33. Goyal K, Hill MR, O'Malley M, Mehta M, Flynn S, Pape H, Moosy J, Tarkin I, "Biomechanical Mechanisms Underlying Peroneal Nerve Injury Following Acetabular Fracture and Surgery," *American Academy of Orthopedic Surgeons (AAOS) Annual Meeting*, Chicago, IL, 2013
34. Goyal K, Hill MR, O'Malley M, Mehta M, Flynn S, Pape H, Moosy J, Tarkin I, "Fibular Tunnel Release may Alleviate Peroneal Nerve Injury after Acetabular Fracture and Surgery," *Orthopaedic Trauma Association (OTA) Annual Meeting*, Minneapolis, MN, 2012
35. Goyal K, Hill MR, O'Malley M, Mehta M, Flynn S, Pape H, Moosy J, Tarkin I, "Mechanisms Underlying Preferential Peroneal Nerve Injury Following Acetabular Fracture and Surgery," *OTA Annual Meeting*, Minneapolis, MN, 2012
36. Hill MR, Robertson AM, "Analyzing Collagen Crimp for Inclusion in Microstructural Mechanical Models," *Proceedings of the BMES Annual Meeting*, Hartford, CT, 2011
37. Remlinger NT, Hill MR, Wainwright JM, Wearden PD, Gilbert TW, "Mechanical Stretch Increases Cardiomyocyte Alignment on Extracellular Matrix Scaffolds," *Tissue Engineering & Regenerative Medicine International Society (TERMIS)*, Orlando, FL, 2010
38. Phillippi JA, Kubala AA, Eskay MA, Hill MR, Robertson AM, Watkins SC, Vorp DA, Gleason TG, "Reduced Oxidative Stress Responses and Disrupted Collagen Homeostasis in Thoracic Aortic Aneurysms in Patients with Bicuspid Aortic Valve," *5th Center for Vascular Remodeling & Regeneration Annual Retreat*, Pittsburgh, PA, 2010
39. Hill MR, Hydrean C, Wulandana R, Robertson AM, "A Device for Uniaxial Mechanical Testing of Arterial Ring Segments," *Proceedings of the BMES Annual Meeting*, Pittsburgh, PA, 2009
40. Hill MR, Catledge SA, Konovalov V, Etheridge BS, Stanishevsky A, Vohra YK, Lemons JE, Eberhardt AE, "Tribological Evaluation of Nanostructured Diamond Coatings Against Ultra-High Molecular Weight Polyethylene," *Proceedings of the Society for Biomaterials Annual Meeting*, Pittsburgh, PA, 2006
41. Hill MR, Catledge SA, Vohra YK, Eberhardt AE, "Wear Testing of Nanocrystalline Diamond Coatings for a Temporomandibular Joint Prosthesis," *Proceedings of the BMES Annual Meeting,* Baltimore, MD, 2005

OTHER PRESENTATIONS AND TRAINING SESSIONS

"The Fascinating Field of Biomechanical Engineering – Continuing Legal Education (CLE)," Central Florida Trial Lawyers Association (CFTLA), October 16, 2025

"How Can Biomechanics Help in Your Discovery? - CLE," South Carolina Defense Trial Attorneys' Association, 2025 Summer Meeting, July 26, 2025

"Pedestrian and Bicycle Accident Reconstruction," Quality Forensic Engineering, LLC, May 19, 2025, pre-recorded for Florida Justice Association (FJA) Annual Paralegal's Conference, June 2025

"Accident Reconstruction 101 – CLE," North Carolina Association of Defense Attorneys (NCADA), May 7, 2025

"Accident Reconstruction 101," Quality Forensic Engineering, LLC, April 28, 2025

"Qforensics Introductory Training: Human Vehicle Environment (HVE) Software," Quality Forensic Engineering, LLC, December 18, 2024

"The Fascinating Field of Biomechanical Engineering – CLE," NCADA, October 16, 2024

"The Fascinating Field of Biomechanical Engineering," Quality Forensic Engineering, LLC, September 19, 2024

"Interactive Brain Injury Accident Reconstruction Demonstration," Connectionology: 3rd Annual Traumatic Brain Injury Seminar, Nashville, Tennessee, May 4 - 7, 2024

"Biomechanics of Traumatic Brain Injury – Continuing Education (CE) Presentation," 2021 Gulf Coast Insurance Fraud Seminar and Vendor Exposition, Texas Association of Special Investigation Units (TASIU), Pasadena, Texas, August 26, 2021

"Human Biomechanics in Low-Speed Vehicle Collisions - CE," Conference, TASIU, Pasadena, Texas, April 10, 2019

PUBLICATIONS

"How Can Biomechanical Engineering Assist in Workers' Compensation Cases?" *The Resource* 12(9), September 2025

THESES

"A Novel Approach for Combining Biomechanical and Microstructural Analyses to Assess the Mechanical and Damage Properties of the Artery Wall," Doctoral Dissertation, Department of Bioengineering, University of Pittsburgh, 2011

"A Tribological Screening of Polyethylene Against Nanostructured Diamond Coatings for Joint Prostheses," Master's Thesis, Department of Biomedical Engineering, UAB, 2006

SCIENTIFIC ARTICLES/PUBLICATIONS

1. Agrawal Y, Fortunato RN, Asadbeygi A, Hill MR, Robertson AM, Maiti S, 2025. "Effect of Collagen Fiber Tortuosity Distribution on the Mechanical Response of Arterial Tissue," *ASME Journal of Biomechanical Engineering*, Volume 147(2): 021004 (DOI 10.1115/1.4067152)
2. Tatler AL, Philp CJ, Hill MR, Cox S, Bullock AM, Habgood AN, John AE, Middlewick RJ, Stephenson KE, Goodwin AT, Billington CK, O'Dea RD, Johnson SR, Brook BS, 2023. "Differential Remodelling in Small and Large Murine Airways Revealed by Novel Whole Lung Airway Analysis," *American Journal of Physiology - Lung Cellular and Molecular Physiology* Volume 324, Issue 3, pages L271-284 (DOI: 10.1152/ajplung.00034.2022)
3. Hill MR, Philp CJ, Billington CK, Tatler AL, Johnson SR, O'Dea RD, Brook BS, 2018. "A Theoretical Model of Inflammation- and Mechanotransduction-driven Asthmatic Airway Remodelling," *Biomechanics and Modeling in Mechanobiology (BMMB)*, Volume 17, pages 1451-1470 (DOI: 10.1007/s10237-018-1037-4)
4. Avazmohammadi R, Hill MR, Simon MA, Sacks MS, 2017. "Transmural Remodeling of Right Ventricular Myocardium in Response to Pulmonary Arterial Hypertension," *Applied Physics Letters: Bioengineering*, Volume 1, Issue 1, 016105 (DOI: 10.1063/1.5011639)
5. Goyal K, Hill MR, O'Malley M, Mehta M, Flynn S, Pape H, Moosy J, Tarkin I, 2017. "Preferential Peroneal Nerve Injury After Posterior Acetabular Fracture and Reconstruction," *Current Orthopaedic Practice*, Volume 29, Issue 2, pages 160-166 (DOI:10.1097/BCO.0000000000000596)

6. Collis J, Hill MR, Nicol JR, Paine PJ, Coulter JA, 2017. "A Hierarchical Bayesian Approach to Calibrating the Linear-Quadratic Model from Clonogenic Survival Assay Data," *Radiotherapy and* Oncology, Volume 124, Issue 3, pages 541-546 (DOI:10.1016/j.radonc.2017.08.015)
7. Avazmohammadi R, Hill MR, Simon MA, Zhang W, Sacks MS, 2017. "A Novel Constitutive Model for Passive Right Ventricular Myocardium: Evidence for Direct Myofiber-Collagen Fiber Mechanical Coupling," *BMMB*, Volume 16, Issue 2, pages 561-581 (DOI:10.1007/s10237-016-0837-7)
8. Yang B, Lesicko J, Sharma M, Hill MR, Sacks MS, Tunnell JW, 2015. "Polarized Light Spatial Frequency Domain Imaging for Non-Destructive Quantification of Soft Tissue Fibrous Structures," *Biomedical Optics Express*, Volume 6, Issue 4, pages 1520-1533 (DOI:10.1364/BOE.6.001520)
9. Robertson AM, Duan X, Aziz KM, Hill MR, Watkins SC, Cebral JR, 2015. "Diversity in the Strength and Structure of Unruptured Cerebral Aneurysms," *Annals of Biomedical Engineering (ABME)*, Volume 43, Issue 7, pages 1502-1515 (DOI:10.1007/s10439-015-1252-4)
10. Hill MR, Simon MA, Valdez-Jasso D, Champion HC, Sacks MS, 2014. "Structural and Mechanical Adaptation of Right Ventricular Free Wall Myocardium to Pressure Overload," *ABME*, Volume 42, Issue 12, pages 2451-65 (DOI:10.1007/s10439-014-1096-3)
11. Simon MA, Hill MR, Champion HC, Sacks MS, 2014. "Biomechanics of Right Ventricular Myocardial Remodeling in Response to Pressure Overload," *The Journal of Heart and Lung Transplantation*, Volume 33, Issue 4, pages S228-S229 (DOI:10.1016/j.healun.2014.01.593)
12. Phillippi JA, Green BR, Eskay MA, Kotlarczyk MP, Hill MR, Robertson AM, Watkins SC, Vorp DA, Gleason TA, 2014. "Mechanism of Aortic Medial Matrix Remodeling is Distinct in Bicuspid Aortic Valve Patients," *Journal of Thoracic and Cardiovascular Surgery*, Volume 147, Issue 3, pages 1056-1064 (DOI:10.1016/j.jtcvs.2013.04.028)
13. Phillippi JA, Green BR, Eskay MA, Kotlarczyk MP, Hill MR, Robertson AM, Gibson GA, Hong Y, Wagner WR, St. Croix C, Watkins SC, Vorp DA, Gleason TA, 2013. "Reactive Oxygen Species and Zinc Mediate BAV Aortopathy," *Cardiovascular Pathology*, Volume 22, Issue 3, pages e42-e43 (DOI:10.1016/j.carpath.2013.01.051)
14. Hill MR, Duan X, Gibson G, Watkins S, Robertson AM, 2012. "A Theoretical and Non-Destructive Experimental Approach for Direct Inclusion of Measured Collagen Orientation and Recruitment into Mechanical Models of the Artery Wall," *Journal of Biomechanics*, Special Issue on Cardiovascular Solid Mechanics, Volume 45, Issue 5, pages 762-771 (DOI:10.1016/j.jbiomech.2011.11.016)
15. Robertson AM, Hill MR, Li D, 2011. "Structurally Motivated Damage Models for Arterial Walls - Theory and Application," in *Modelling of Physiological Flows*, Ambrosi D, Quarteroni A, Rozza G (eds.), Springer, ISBN 978-88-470-1934-8, pages 143-185 (DOI:10.1007/978-88-470-1935-5-6)
16. Clem WC, Chowdhury S, Catledge SA, Weimer JJ, Shaikh FM, Hennessy KM, Konovalov VV, Hill MR, Waterfeld A, Bellis SL, Vohra YK, 2008. "Mesenchymal Stem Cell Interaction with Ultra-Smooth Nanostructured Diamond for Wear-Resistant Orthopaedic Implants," *Biomaterials*, Volume 29, Issues 24-25, pages 2461-2468 (DOI:10.1016/j.biomaterials.2008.04)

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